



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,814	04/21/2004	Joerg Schottek	1094-54N	7274
28249	7590	07/14/2006		
DILWORTH & BARRESE, LLP			EXAMINER	
333 EARLE OVINGTON BLVD.			LEE, RIP A	
UNIONDALE, NY 11553				
			ART UNIT	PAPER NUMBER
			1713	

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/828,814	SCHOTTEK ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Rip A. Lee	1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 27 April 2006.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,4,6-11,13,15,17,27-42 and 53-71 is/are rejected.
- 7) Claim(s) 3-5, 12-14, 16, 18-26, 28, 43-52 and 72 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

This office action follows a response filed on April 27, 2006. Claims 1, 29, 30, and 34 were amended to clearly define the invention. Claims 1-72 are pending.

***Claim Objections***

1. Claims 3, 12, 18, and 24, which depend from claims 2, 11, 17, and 23, respectively, are objected to because of the following informalities: Claims 3, 12, 18, and 24 define substituent R<sup>41</sup> as a C<sub>1</sub>-C<sub>30</sub> hydrocarbon group, yet claims 2, 11, 17, and 23 state that R<sup>41</sup> restrict alkyl groups to a minimum of 2 carbon atoms. Claims 3, 12, 18, and 24 do not appear to limit further the subject matter of their corresponding preceding claims (*i.e.*, in the case where R<sup>41</sup> is methyl). Appropriate correction is required.
2. Claims 4, 5, 13, 14, 19, 20, 25, 26, and 28 are objected to because of the following informalities: It is not clear how cyclopentyl, cyclopentadienyl and cyclohexyl fall under the general description of “alkyl group of from about 2 to about 30 carbon atoms.” Appropriate correction is required.
3. Claim 25 is objected to because of the following informalities: Substituent R<sup>3'</sup> can not be *n*-butyl since it must be branched in the  $\alpha$ -position. Appropriate correction is required.
4. Claim 28 is objected to because of the following informalities: The species di(cyclopentyl)silanediyl and cyclohexyl(methyl)silanediyl do not appear in preceding claims 27. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 2, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki *et al.* (U.S. 6,184,402).

Yamazaki *et al.* discloses a process for enriching the *rac/meso* ratio of stereoisomeric metallocenes having general formula (I). Example 3 shows a composition comprising 97/3 *rac/meso*-(C<sub>4</sub>H<sub>8</sub>Si)(Me<sub>3</sub>Cp)<sub>2</sub>ZrCl<sub>2</sub>. Here, alkyl groups on Si have more than 2 carbon atoms and they are linked in a manner to form a ring.

9. Claims 4, 9-11, 13, 15, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki *et al.*

The discussion of the disclosures of the prior art of from the previous paragraph of this office action is incorporated here by reference. According to the examples, the method affords a metallocene mixture having a *rac/meso* ratio of greater than 5/1 consistently, and as shown by formula (I), this includes metallocenes having R<sup>9</sup> and R<sup>10</sup> that are C<sub>1</sub>-C<sub>20</sub> alkyl groups, C<sub>2</sub>-C<sub>20</sub> alkenyl groups, C<sub>7</sub>-C<sub>20</sub> alkylaryl or arylalkyl groups, those in which R<sup>1</sup>-R<sup>4</sup> are substituents that contain heteroatoms, and metallocenes having polycyclic π-ligands such as 2-Me-Ind, 2-Me-benzoInd, 2-Me-4-Ph-Ind and 2-Me-4-naphthyl-Ind (col. 2, lines 60+, col. 3, lines 6-9, col. 5, lines 19-23, and col. 9, lines 15-18). The examples do not show a process in which the same process is carried out with such metallocenes, however, it would have been obvious to one having ordinary skill in the art to use the invention of the prior art and arrive at the subject matter of the instant claims because such an embodiment is contemplated by the prior art.

10. Claim 29 is rejected under 35 U.S.C. 102(e) as being anticipated by Rix *et al.* (U.S. 6,960,676).

Rix *et al.* discloses a process for making compounds of formula Ar<sub>2</sub>Si(Ind-H) by the reaction of Ar<sub>2</sub>Si(OTf)<sub>2</sub> and two equivalents of LiInd (where Ar is substituted phenyl and Ind is substituted indenyl (see structures in col. 6-8 and 11-14).

11. Claims 1, 2, 4, 6-9, 11, 13, 15, 17, 19, 20, 30-42, and 53-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rix *et al.*

The discussion of the disclosures of the prior art of from the previous paragraph of this office action is incorporated here by reference. Subsequent deprotonation of compounds  $\text{Ar}_2\text{Si}(\text{Ind}-\text{H})$  with base and reaction with  $\text{MX}_4$  affords the corresponding metallocenes (col. 30). The reference is silent regarding the *rac/meso* ratio for all combinations of metallocene, however in view of the fact that process steps of the prior art are essentially the same as those recited in the instant claims, and in light of the fact that the example shows formation of predominantly racemic stereoisomer, a reasonable basis exists to believe that the process of Rix *et al.* affords essentially the same mixture of metallocene product. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

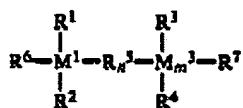
The subject matter of claims 34-42 and 53-71 is obvious over the teachings of Rix *et al.* It would have been obvious to one having ordinary skill in the art to arrive at the subject matter of claim 34 because Rix *et al.* teaches making a catalyst comprising the metallocenes of the invention, activator, and support (col. 23, lines 47+ and supported catalyst systems A-D, col. 32). Catalyst supports include inorganic oxides and polymeric (polyolefin) resins (col. 23, lines 47+). Use of ionic and neutral activators is discussed thoroughly in col. 22 to col. 23. Catalysts of the invention are used in polymerization of ethylene and  $\alpha$ -olefins and combinations thereof (col. 25, lines 40+).

12. Claims 1, 2, 4, 6-9, 29, 30-32, 34-36, 40, 41, 53-55, and 62-70 are rejected under 35 U.S.C. 102(b) as being anticipated by Thiele *et al.* (U.S. 5,945,367).

Thiele *et al.* discloses a composition comprising  $(\text{Me})(\text{Me}_3\text{Si})\text{Si}(\text{2-MeInd})_2\text{ZrCl}_2$  (*rac/meso* = 20, example IV) prepared from reaction of free ligand with BuLi and subsequent contact with  $\text{ZrCl}_4$ . Catalysts contain the inventive metallocenes, activator, and support (col. 5, lines 15-45 and 62-67), and they are used for polymerization of olefins of formula  $\text{R}^a\text{-CH}=\text{CH-}\text{R}^b$ ; in particular, ethylene, propylene, and butene are copolymerized (col. 6, lines 7-20).

13. Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Rohrmann *et al.* (U.S. 4,985,576).

Rohrmann *et al.* discloses bisindenyl derivatives having the general formula shown below where M<sup>1</sup> is Si or Ge, R<sup>6</sup> and R<sup>7</sup> is substituted indenyl, and R<sup>1</sup>-R<sup>4</sup> are identical or different and denote C<sub>1</sub>-C<sub>30</sub> alkyl, C<sub>2</sub>-C<sub>10</sub> alkenyl, C<sub>7</sub>-C<sub>40</sub> alkylaryl or arylalkyl, where m = 0 or 1, n = 0 or 1 (claim 1). Substituted indenyls are exemplified as 1-Me<sub>3</sub>SiInd, 1-PhInd, 1-, 2-, 4- or 5-MeOInd, 1-, 2-, 4- or 5-MeInd (col. 2, lines 25-27).



14. Claims 1, 2, 4, 6-8, 34-42, and 53-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winter *et al.* (U.S. 6,365,763).

Winter *et al.* teaches a process for making a metallocene having a *rac/meso* ratio of greater than 20/1 (claim 1). The metallocene is an *ansa*-metallocene having bridging group B', defined as R<sup>14</sup>R<sup>15</sup>C=, R<sup>14</sup>R<sup>15</sup>Si=, -CR<sup>14</sup>R<sup>15</sup>-CR<sup>14</sup>R<sup>15</sup>- where R<sup>14</sup> and R<sup>15</sup> are identical or different and are C<sub>1</sub>-C<sub>4</sub> alkyl group. The carbocyclic ligand is a substituted cyclopentadienyl ligand, examples of which are disclosed extensively in col. 9 and 10. There are no working examples that show synthesis of metallocenes containing R<sup>14</sup>R<sup>15</sup>C=, R<sup>14</sup>R<sup>15</sup>Si=, or -CR<sup>14</sup>R<sup>15</sup>-CR<sup>14</sup>R<sup>15</sup>- where R<sup>14</sup> and R<sup>15</sup> are C<sub>2</sub>-C<sub>4</sub> alkyl group, however, it would have been obvious to one having ordinary skill in the art to arrive at the subject of instant claims 1, 2, 4, and 6-8 because Winter *et al.* contemplates making such metallocenes having a *rac/meso* ratio of greater than 20/1. The subject matter of the remaining claims is obvious over the general teachings of the patent. Metallocenes are used as catalyst for olefin polymerization. Activators are discussed extensively in col. 11 and 12. Methods for preparing supported catalysts are described in col. 13 and 16. Types of monomer and polymerization are disclosed in col. 6, lines 55+.

***Allowable Subject Matter***

15. Claims 3, 5, 12, 14, 16, 18, 21-26, 43-52 and 72 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome claim objections (claims 3, 5, 12, 14, 24-26) and if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the cited references teaches or makes obvious the claimed subject matter.

***Relevant Prior Art***

16. WO 02/14384, WO 03/05943, and Alt *et al.* (*J. Organomet. Chem.*, 1998) have been cited as “X” references in a corresponding international search. The documents have been reviewed, and they do not apply to the claims as amended. Moreover, none of these references discloses information about mixtures of stereoisomeric metallocenes having a *rac/meso* ratio of greater than 5/1.

***Response to Arguments***

17. The rejection of claims under 35 U.S.C. 112, second paragraph has been withdrawn in view of amended claims.

The rejection of claim 29 under 35 U.S.C. 102(b) as being anticipated by Rohrmann *et al.* (U.S. 4,985,576) has been withdrawn.

***Conclusion***

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

ral

July 7, 2006

  
LING-SUI CHOI  
PRIMARY EXAMINER